

## POSITIONS AND AREAS OF SUNSPOTS—Continued

Date	East- ern stand- ard time	Mount Wilson group No.	Hellographic				Area of spot or group	Spot count	Plate qual- ity	Observatory
			Dif- fer- ence in longi- tude	Longi- tude	Lat- tude	Dis- tance from center of disk				
1939	A M		°	°	°	°				
June 29..	8 35	6507	+7	114	-3	9	121	20		
		(*)	+8	115	+25	25	6	2		
		6518	+25	132	-14	29	18	7		
		6516	+67	174	+8	68	121	11		
			(107)	(+3)			1,863	170		
June 30..	11 57	6522	-50	42	-9	51	242	6	F	U. S. Naval.
		6517	-22	70	-22	32	242	2		
		6514	-19	73	-23	32	24	3		
		6514	-10	82	-23	26	61	2		
		6509	+4	96	-7	10	170	21		
		6519	+7	99	-17	20	194	12		
		(*)	+7	99	+9	10	36	8		
		6519	+15	107	-12	20	291	3		
		6508	+10	111	+5	19	170	2		
		6507	+20	112	-3	21	73	11		
		6518	+38	130	-12	40	6	2		
		6516	+81	173	+9	82	12	1		
			(92)	(+3)			1,521	73		

Mean daily area for 30 days, 1,430.

\* = Not numbered.

Plate quality: P, poor; F, fair; G, good, VG, very good.

PROVISIONAL SUNSPOT RELATIVE NUMBERS FOR  
JUNE 1939

[Dependent alone on observations at Zurich]

[Date furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich, Switzerland]

June 1939	Relative numbers	June 1939	Relative numbers	June 1939	Relative numbers
1.....	129	11	Ec 119	21	68
2.....	a 120	12	-----	22	74
3.....	ad 113	13	d ---	23	dd 65
4.....	a 97	14	a ---	24	74
5.....	d 104	15	a 101	25	61
6.....	124	16	97	26	c 84
7.....	127	17	-----	27	Ec 109
8.....	d 113	18	MWcc 91	28	d 137
9.....	ad 116	19	89	29	aa 134
10.....	a 104	20	aa ---	30	a 118

Mean, 25 days=102.7

a = Passage of an average-sized group through the central meridian.

b = Passage of a large group through the central meridian.

c = New formation of a group developing into a middle-sized or large center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the central-circle zone.

d = Entrance of a large or average-sized center of activity on the east limb.

## AEROLOGICAL OBSERVATIONS

[Aerological Division, D. M. LITTLE in charge]

By B. FRANCIS DASHIELL

The 646 upper-air observations of atmospheric pressure, temperature, and humidity made by airplanes and radiosondes in the United States, Canada, Bermuda, the north Atlantic, Canal Zone, and Hawaii, during the month of June 1939, are shown in tables 1 and 1a. The pressures and temperatures, as well as resultant-wind directions and forces, are indicated on charts VIII, IX, X, and XI. Isentropic data for June are shown on chart XII. Tables 2 and 3 present certain upper-air wind observations, and table 4 shows the mean height of the tropopause during the month. A complete description of these charts and tables will be found in the January 1939 issue of the MONTHLY WEATHER REVIEW.

In the lower levels of the atmosphere (up to 5 kilometers) where observations are obtained both by airplanes and radiosonde, all stations but one computed monthly means at 5 kilometers. Of all radiosonde observations launched at the surface 40 percent reached 19 kilometers and 5 stations were able to compute means for 21 kilometers. Individual ascents to 23 kilometers were made at all stations, and one flight over the north Atlantic reached 24 kilometers.

A great area of low mean atmospheric pressure prevailed during June north of the United States across southern Canada and stretched indefinitely northeast of the Hudson Bay region. This pressure distribution is shown on charts VIII, IX, X, and XI. In the United States, however, the lowest mean pressure at the 5,000-foot level (1,524 meters—chart VIII) was recorded on Mount Washington, N. H., while relatively low mean pressures prevailed over the northern Rocky Mountain region. At 3, 4, and 5 kilometers, lowest mean pressures were noted over Spokane, Wash., and highest pressures over the Southeast, particularly Pensacola, Fla., and Norfolk, Va. This distribution varied somewhat from that noted during the preceding spring and winter months when Sault Ste. Marie, Mich., recorded the lowest pressures in the United States.

Above 5 kilometers, where only radiosonde observations are made, lowest mean pressure occurred over Fargo, N. Dak., and highest pressure over Nashville, Tenn., at all levels from 6 to 19 kilometers. Mean pressures at Washington, D. C., and St. George's, Bermuda, were nearly the same for all levels. The latter, however, averaged slightly lower. Over the north Atlantic ocean, between 40° and 43° N. and 47° and 53° W., mean pressures at all levels were slightly higher than those recorded over Halifax, Nova Scotia, but considerably lower than the pressures noted at St. George's, Bermuda.

Charts VIII, IX, X, and XI show the mean temperatures for June at 1.5, 3, 4, and 5 kilometers, respectively. Mean low temperatures occurred over the same areas where lowest mean pressures were noted within the United States. Mean temperatures were highest over El Paso, Tex., at 1.5, 3, and 4 kilometers, and over Pensacola, Fla., at 5 kilometers. San Diego, Calif., was warmer than Pensacola, Fla., at 1.5 and 3 kilometers. At 5 kilometers the lowest mean free-air temperature was -14.4° C. over Spokane, Wash. This was slightly colder than in the preceding month and decidedly lower than in the corresponding month of 1938.

The lowest free-air temperatures for June were recorded over Sault Ste. Marie, Mich., at the surface; over Seattle, Wash., from 0.5 to 2.5 kilometers; Spokane, Wash., at 3, 4, and 5 kilometers; Fargo, N. Dak., from 6 to 12 kilometers; Washington, D. C., at 13 and 14 kilometers; Oklahoma City, Okla., from 15 to 18 kilometers; and over Washington, D. C., at 19 kilometers. The lowest mean temperatures for June were recorded over St. George's, Bermuda, at 12, 13, 14, 15, and 16 kilometers.

While all stations (tables 1 and 1a) were warmer in June than during the preceding month of May in the lower levels, the current month was colder in the higher levels. This was particularly noticeable above the 13-kilometer level over all stations except Fargo, N. Dak.